

Chapter - 7

Ecologically Significant Areas (ESA) & Other Special Areas

1. Introduction

This category includes a variety of areas designed to represent and protect significant or unique natural communities, elements of biological diversity or an area with cultural or historical value that must be considered as part of forest management. These sensitive resource areas may sometimes overlap, such as, an eagle nest may be found in a riparian forest buffer that is also within a DFS management zone. Many of these areas have been “flagged” in the GIS database, but that data layer periodically changes as new information is collected. Therefore, the acreage estimates given in the Plan are approximate, and on-the-ground marking and GPS locations are needed as new areas are identified.

The objective of the Plan was to provide future land managers with guidelines for identifying and managing such areas when they are encountered. Management of these areas will be focused on protection and enhancement. The nature and extent of management occurring in these areas will be determined on a case-by-case basis depending on the sensitivity and significance of the features, size of the area and the need for stewardship activities. The Forest Manager will work closely with Wildlife and Heritage Service staff and the Chesapeake Forest ID team in developing management strategies to protect these areas.

2. Ecologically Significant Area (ESA) Defined

This plan uses the term “Ecologically Significant Area” to identify unique sites that have special ecological significance. These areas have been specifically delineated and must be given careful management consideration. ESA’s are areas that harbor or could potentially harbor rare, threatened or endangered (RTE) species and/or unique natural community types. For ESA’s that have been identified because of potential RTE habitat, one or more RTE species occur within 0.25 mile of a Chesapeake Forest (CF) tract. The rationale for including these is that the potential for these or other RTE species to also occur on the given CF tract is high because of similar soil and/or wetland types, especially when consideration is given to restoration and proper management.

In addition to the main criteria (RTE species and unique natural communities) used for establishing ESAs, other criteria were also used to assist in determination of ESA boundaries. These included: topography and geomorphology (based on U.S. Geological Survey topographical quads and geology maps); hydrology (based on National Wetland Inventory and State wetland maps); soil types (based on U.S. Department of Agriculture soil surveys); expanded stream buffers within Forest Interior Bird (FIDS) management zones, Delmarva Fox Squirrel (DFS) management zones and for water quality; expanded wetland buffers for conservation of amphibian life zones; existing Wetlands of Special State Concern (WSSC) and associated buffers; existing Natural Heritage Areas (NHAs) as designated by state law; surrounding land uses (houses, farms, etc.); and wildlife travel corridor linkages.

Following a thorough analysis ESA boundaries were delineated using ArcView, a geographic information system (GIS) software program. Digital geo-referenced layers

for most of the above criteria were used. The ESA boundaries are now a part of the CF database used for planning and review purposes. In addition to the GIS exercise, a wide range of species experts also evaluated the alignment of the established ESA network to ensure that the ecological criteria were accurately applied.

ESAs presently occur on 127 CF tracts and comprise approximately 10,386 acres or about 18% of the entire forest. Some ESA boundaries will expand over time or entirely new ESAs will be delineated, both based on the discovery of new rare resources. Conversely, some ESAs may be removed from the list based on new knowledge or changed legal status of a particular species. ESA boundaries in many cases overlap FIDS and DFS management zones. Management decisions will need to be hierarchical where this occurs, with ESA management taking precedence over all other considerations, followed by FIDS management, followed by DFS management. Timber management, while still possible in most ESAs, will be ancillary to the needs of these sensitive resources.

3. ESA Management

The goal of ESA management is not only the maintenance of existing rare species habitat, but also restoration of additional habitat to further enhancing RTE populations and natural communities. In addition, the protection of ecosystem function from a landscape level perspective is also an important objective to pursue. The significant and unique natural communities and landscape features occurring on the mid and lower Eastern Shore that have been identified as targets of ESA management and restoration include: Delmarva or Carolina bays (elliptical nontidal depressional wetlands); xeric sand ridge complexes (post-pleistocene inland sand dunes within the parsonsbury sand formation); pine-oak barrens; forested wetlands (atlantic white cedar swamps, bald cypress swamps and all floodplain forests); rich woods (coastal plain woods with piedmont plant affinities); open-canopy herbaceous wetlands (coastal plain bogs, fresh tidal marshes, fresh non-tidal wetlands and wet meadows); remnant grasslands; scrub-shrub wetlands; and ravines. Any representatives of old growth or near old growth forest were also targeted.

Management/restoration plans will need to be written for each ESA to address specific RTE and natural community requirements. The Natural Heritage Program has identified the top 10 ESA's for priority action. These, in order of priority, are: Campbell Complex, Messick Pond, Brookview Ponds, Peters Creek Upland, Stump Gut, Centennial Ponds, Marshyhope Sand Ridge Complex, Disharoon Road Powerlines, Taylor's Trail Sand Ridges and Nassawango-Colbourne Complex. Eventually however, all ESA's will receive some form of management attention.

Restoration and management of ESAs will use an array of techniques, depending on the final desired outcome. Management actions will attempt to produce mixed hardwood-pine forests in some cases, in others to promote open-canopy habitats with little or no trees, and in others to promote oak-pine barrens or savannahs. Techniques to achieve these goals may include heavy thinning or clear-cutting of existing pine plantations followed by prescribed burns (where public safety or other concerns are not a problem). Removal of windrows, planting of specific tree species (e.g., shortleaf pine, pitch pine, oaks, etc.) may also be attempted. Restoration/management plans for each

ESA will be reviewed by the Chesapeake Forest Interdisciplinary Team (ID Team) before implementation.

Concerns for ESAs will also be addressed during Annual Work Plan (AWP) reviews by the full ID Team. This will often be done at the time another silvicultural operation (thinning or harvest) is planned. During the AWP reviews, all actions necessary to protect, restore or enhance affected ESA's must be considered.

4. ESA Summary

The following ESAs have been delineated and occur, in part or totality, on Chesapeake Forest Lands. However, it is important to note that ESAs are dynamic. Over time, given new information and changing landscape conditions, the exact location, size and configurations of these areas may change.

Adkins VI – Horsebridge Creek Bogs

Wicomico County

80.85 acres within:

Tract #3549: stands 1, 2 & 5

This ESA contains populations of 27 rare, threatened and endangered (RTE) plant species including 10 state-endangered and 11 state-threatened plants. Most of these species are associated with wetlands, including bog, wet meadow and shrub-swamp communities, though a few are associated with xeric sand ridges and pine-oak savannahs. The area within this ESA includes wetlands supporting rare species, adjacent and upstream wetlands that influence hydrology and water quality, and nearby xeric sandy soils that act as recharge areas and habitat for additional rare species. The ESA boundaries also include a Wetland of Special State Concern (WSSC), rare species habitat within a powerline right-of-way (ROW) and a 300-foot upland buffer for FIDS management.

Andrews Branch Swale

Wicomico County

22.04 acres within:

Tract #3533, stands 1 & 2

This ESA harbors populations of 2 state-endangered and 1 watchlist species that are part of a coastal plain bog wetland system along two different tributaries of Nassawango Creek. The ESA boundary includes bogs, other nontidal wetlands (including an old logging roadbed) that provide habitat for rare species, a powerline ROW with rare species habitat, wetlands upstream to protect hydrology and water quality, and forested wetland and stream buffers.

Beech Swamp Sandpits

Worcester County

37.96 Acres within:

Tract # 3728: stands 1, 3, 4, 5, 6 & 7

This ESA contains a series of shallow water, seasonally flooded sandpits that support an array of freshwater emergent plants. Two RTE wetland species, one of which is state-endangered, are located in these sandpits. This ESA was delineated to include the series of sandpits and associated uplands that support the rare species. A 100-foot upland buffer is included for all wetlands.

Big Millpond

Dorchester County

17.18 acres within:

Tract# 4213: stands 5, 7 & 8

This ESA was delineated to protect 2 state-endangered species. The ESA boundary includes a large pond created by impoundment of the Chicamcomico River which is a designated Wetlands of Special State Concern (WSSC), and an additional 300 ft upland buffer to support a FIDS core habitat area and protect hydrology and water quality for rare aquatic species.

Brohorn Creek

Dorchester County

39.18 acres within:

Tract#4206: stands 2 & 3, Tract#4219: stands 4,5 & 6

This ESA contains a state-threatened plant species found in the floodplain of Brohorn Creek. The ESA boundary includes wetlands that provide habitat for the rare species and an expanded upland buffer (300 feet) where it intersects with high quality FIDS habitat. These wetlands are associated with Brohorn Creek, Marshyhope Creek and several small tributaries that drain agricultural land to the west. This ESA is within Upper Nanticoke River NHA.

Brookview Ponds

Dorchester County

475.74 acres within:

Tract#4211: entire tract, Tract#4217: stands 1, 2, 3, 4, 5 & 6,

Tract#4207: stands 1, 2, 3 & 5, Tract#4225, stands 1, 2, 3, 4, 5, 8, 10 & 11

This ESA encompasses a series of Delmarva bays, boggy roadside ditches and adjacent sandy upland openings. It is host to 15 RTE plants and 1 RTE animal, including 8 state-endangered and 2 state-threatened plant species, and 1 amphibian species state-listed as In Need of Conservation. The ESA boundary includes all the Delmarva bays in the area plus adjacent upland amphibian life zones and groundwater recharge areas.

Buck Harbor Road Ditch

Worcester County

15.67 acres within:

Tract#3717: stands 1, 4, 5, 6, 9 & 11

This ESA contains a state-threatened plant species that occurs along the upper reaches of the now ditched Pilchard Creek. This ESA boundary contains the habitat supporting the rare species and available habitat in the immediate vicinity.

Campbell Complex

Wicomico County

362.67 acres within:

Tract#3539: stands 1, 2, 3 & 5, Tract#3507: entire tract, Tract#7123: stands 3, 4 & 5

Tract#3536: entire tract, Tract#7148: stand 1, Tract#7164: stands 1 & 2,

Tract#3598, stand 1

This diverse ESA has 20 RTE species including 7 state-endangered and 4 state-threatened plants, and 1 amphibian species state-listed as In Need of Conservation. The ESA boundary encompasses a powerline ROW with both RTE wetland and xeric sand ridge plant species, a number of Delmarva bays supporting RTE plant and animal species, dry xeric ridges supporting a rare tiger beetle species, and areas with rare plants with pine barren affinities. This ESA includes the only Maryland location and 1 of 2 Delmarva Peninsula locations for a rare pine barren plant. The ESA boundary also includes forested wetland buffer.

Centennial Ponds

Dorchester County

325.70 acres within:

Tract#4256: stand 1, 2, 3 & 5, Tract#4260: stand 1

This ESA is a series of Delmarva bays and surrounding upland that includes 5 state-endangered plant species, 1 state-threatened plant species and an animal species listed as In Need of Conservation. The ESA boundary includes the bays and adjacent wetlands that are hydrologically connected, plus a forested upland buffer suitable as amphibian life zones.

Chicone Woods

Dorchester County

1.76 acres within:

Tract#4225, stands 2 & 6

This ESA was designed around a rich woods community and the associated Chicone Creek. This ESA supports 7 RTE species. Three of these species are state-endangered, one of which is also globally rare and state-endangered, and one that is state-threatened. This ESA contains the rare species populations, the habitat supporting these populations and a wetland buffer around Chicone Creek.

Corbin Canyon

Worcester County

183.48 acres within:

Tract#3714: stands 12, 15 & 17, Tract#3709: stands 5, 6, 7, 9, 10, 11, 12 & 13

This ESA encompasses Corbin Branch, a tributary of the Pocomoke River, its steep ravine slopes, upland xeric sandy ridges, and forested buffers for the steep slopes to maintain water quality and the hydrology of Corbin Branch. Four state-threatened plants occur in the forested wetland along Corbin Branch, the steep slopes and the xeric sandy ridges of the uplands. The floodplain also has some characteristics of old growth forest and contains large bald cypress.

Delaware Wildlands

Wicomico \ Worcester Counties

181.71 acres within:

Tract#3731: stands 1, 4, 6, 7 & 9

This ESA is an exceptionally diverse wetland complex with a state-endangered bird, state-threatened butterfly, state rare reptile and an amphibian that is state-listed as In Need of Conservation. The ESA boundary includes the already protected Delaware Wildlands property, associated forested wetlands and uplands, and amphibian life zones. This is a landscape level boundary to maintain the upper Pocomoke River ecosystem. FIDS core habitat is also found within this ESA.

Disharoon Road Powerlines

Worcester County

119.09 acres within:

Tract#3742: stands 2, 3, 6, 7 & 8

This ESA contains 9 RTE plant species and 1 rare amphibian, all located along a powerline ROW that bisects this tract or in an adjacent abandoned logging road, both of which have served as refugia for these rare open-canopy species. Some of these are species of non-tidal wetlands while others occur on xeric sand ridges. This list includes 6 state-endangered and 1 state-threatened plant species, and 1 amphibian species state-listed as In Need of Conservation. Management activities will focus on expanding these ROW populations to adjacent restored wetland and upland habitat. The ESA boundary includes the ROW, adjacent non-tidal emergent and scrub-shrub wetlands and an area of dry Lakeland soils, to provide a complex of wetlands and xeric sand ridge habitats. The boundary also includes buffering for amphibian life zones.

Dividing Creek Headwaters

Worcester County

353.78 acres within:

Tracts#3781: stands 1, 2, 4, 5, 6, 7

This ESA was designed around four RTE plant species two of which are state-endangered. Three of these species are located in a large clear-cut while the other is located in open canopied pockets found infrequently at the site. The boundary includes that habitat supporting the four RTE species, a Bald Eagle nest and available habitat for the rare species in the immediate vicinity.

Drexell Branch

Worcester County

2.38 acres within:

Tract#3709: stand 2

This ESA contains two Delmarva bays and 8 RTE wetland plant species. The ESA boundary includes open-canopy wetlands that support rare plants and a minimum 500 ft buffer for amphibian life zone protection. The Chesapeake Forest tract provides buffer for the bays, which occur on an adjacent property.

Dublin Swamp

Somerset County

78.89 acres within:

Tract#5422: stands 4 & 12

Dublin Swamp is one of the largest non-tidal wetlands on the Eastern Shore. This ESA was delineated to protect populations of a state-threatened and a state rare wetland plant species, and also includes a designated WSSC. The ESA boundary comprises the wetland habitat of the rare plants, the WSSC and a 300 ft upland buffer for inclusion of a FIDS core area.

Eden Swamp and Powerline

Somerset County

346.37 acres within:

Tract#4834: 1, 2 & 4, Tract#4859: stands 1 & 3, Tract#5458: entire tract

This ESA encompasses a unique non-tidal swamp forest and a mesic powerline ROW, containing 9 RTE plant species including two state-endangered plants one of which is a globally rare wetland plant and 4 state-threatened plant species. The ESA boundary incorporates the habitat of rare wetland and upland plants and the surrounding designated WSSC, plus additional forested buffer.

Emanuel Cemetery Bay

Somerset County

42.28 acres within:

Tract#4856: stands 1 & 4, Tract#4898: stands 1 & 2

Emanuel Cemetery Bay is a ESA containing a series of small open canopied bays that support one state-endangered plant species. The ESA boundary includes the bays and adjacent wetlands that are hydrologically connected, plus a forested upland buffer.

Fishing Bay

Dorchester County

1449.05 acres within:

Tract#4255: stands 1, 2 & 3, Tract#4262: stands 1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12

This large ESA was created to include the Savannah Lake NHA, a large WSSC, DFS and FIDS habitat, many bald eagle nesting sites and populations of 4 RTE animal species, other than bald eagles. Two of these animals are state-threatened, and two are In Need of Conservation. This ESA contains at least 17 ecological communities in excellent condition. Some of these include salt march cordgrass, salt meadow, saltbush, big cordgrass, black needlerush, narrowleaf cattail, freshwater-mixed, and mud flat. The uplands are a necessary component of these various communities and are thus included in the ESA.

Franklin Swamp

Worcester County

9.54 acres within:

Tract#3762, stand 2

The Franklin Swamp ESA includes a large non-tidal swamp forest that supports a state-endangered plant species. Associated with this rare species is an odd assortment of wetland and upland plant species, creating a very ecologically diverse area for this portion of Worcester County. A small portion of CF land is included within this ESA because of similarities in hydrology and soil to the remainder of the ESA.

Greenbriar Swamp Road Flatwoods

Worcester County

76.78 acres within:

Tract 3737, stands 1 & 3

This ESA includes a recently cleared loblolly pine stand that supports 4 rare species, one of which is state-threatened. As well as the current habitat, the ESA also contains areas with similar soil and hydrologic regimes that are necessary for the rare species.

Hound Sandpits

Wicomico County

30.66 acres within:

Tract#3539: stands 3 & 5, Tract#7103: stands 1, 5 & 6

This ESA focuses on a series of shallow water, seasonally flooded sandpits that support an array of freshwater emergent plants and several areas of bog mats dominated by sphagnum moss. One state-endangered and one state-threatened wetland plant occurs here. The ESA boundary includes the sandpits that harbor rare plants and adjacent nontidal wetlands that offer potential habitat for rare plants if open canopy is maintained. A 100-foot upland buffer is included for all wetlands.

Johnson Road Powerline Swale

Wicomico County

1.20 acres within:

Tract#3520: stand 1

This ESA includes a powerline ROW with an emergent non-tidal wetland and a xeric sand ridge, both with rare plants. Both habitat types extend onto the adjacent Chesapeake Forest tract, which may support additional populations, with management.

Johnson Sand Ridge

Wicomico County

30.66 acres within:

Tract#3505: stands 1, 2 & 5, Tract#3590: stand 1

This ESA encompasses a xeric sand ridge of Evesboro soils and a harbors a population of a state-endangered plant.

LeCompte Bay

Dorchester County

170.74 acres within:

Tract#4222: stands 1, 2, 3, 4, 5, 6

This ESA contains 7 RTE plant species. Five of these are state-endangered and two are state-threatened. The habitat requirement of these species includes dry sandy, to seasonally flooded, open canopied wetland habitats. This ESA contains the populations of the rare species, the available habitat in the vicinity and a forested buffer around the wetlands.

Little Mill Run

Worcester County

187.13 acres within:

Tract#3718: stands 1, 3, 5, 6, 7 & 9

This diverse ESA includes 7 RTE species, 1 state-endangered plant, 2 state-threatened plants, and 1 animal listed as In Need of Conservation. The endangered plants are species of mesic-to-hydric woods. This ESA includes a designated WSSC and additional stream buffer/upland habitat along Little Mill Run and tributaries. The ESA boundary also includes some xeric sand ridges adjacent to the floodplain. Much of this area is also high quality FIDS habitat and the buffer was extended 300 ft from the floodplain/upland edge where FIDS habitat is concurrent.

Marshyhope Creek North

Caroline County

189.68 acres within:

Tract#6401: stands 1 & 2, Tract#6404: stands 2, 3, 4 & 7, Tract#6405: stands 1, 2, 3 & 4

Tract#6411: stands 1, 2, 3, 4 & 5

This large and diverse ESA is a landscape level boundary to maintain the upper Marshyhope Creek ecosystem. The 7 RTE species here include 3 fishes (one state-endangered, one state-listed as In Need of Conservation, one state-rare) 3 state-rare plants (one a rich woods species, one a floodplain forest species; one a xeric sand ridge species) and a state-threatened and globally rare plant of fresh-tidal mudflats. The ESA boundary includes the mainstem of Marshyhope Creek from Federalsburg north, including all tributaries to the headwaters, plus an upland buffer which is expanded to 300-feet through a FIDS core area.

Marshyhope Sand Ridge

Dorchester County

3034.41 acres within:

Tract#999 entire tract, Tract#4205 entire tract, Tract#4209 entire tract, Tract#4210 entire tract, Tract#4227 entire tract, Tract#4229 entire tract, Tract#4231 entire tract, Tract#4232 entire tract, Tract#4233 entire tract, Tract#4234 entire tract, Tract#4236, entire tract
Tract#4257, entire tract

This diverse ESA is one of the largest contiguous forested xeric sand ridge habitats along Marshyhope Creek. A total of 11 RTE species occur here including 3 state-endangered plants (1 floodplain species, 2 xeric sand ridge species), one state-threatened plant of xeric ridges, one rare amphibian state-listed as In Need of Conservation, and 7 state-rare plants, one of which is globally rare and the Marshyhope floodplain harbors the bulk of the world's population. The ESA boundary, which includes 3122 acres of CF tracts, encompasses tidal and nontidal wetlands along the east side of Marshyhope Creek and tributaries, and a mosaic of xeric sand ridges interspersed with sandy flats and wetlands. It has excellent potential for enhancement of natural systems and expansion of existing

rare plant and animal communities. The area also features excellent potential for FIDS and DFS management.

Meadow Bridge Ridges

Worcester County

55.67 acres within:

Tract#4828: stand 1, Tract#3702: stands 1, 3, 5 & 6

This ESA consists of xeric sand ridges, the fresh-tidal forested floodplain of Dividing Creek, a mesic powerline ROW and an abandoned sandpit. There are 3 species tracked by the Heritage Program located within this ESA, including a state threatened plant of xeric sand ridges). The ESA boundary includes xeric sand ridge habitat and seepage slopes grading to floodplain wetlands. The area also contains high quality FIDS habitat.

Messick Pond

Dorchester County

146.58 acres within:

Tract#4215: stands 1, 2 & 4, Tract#4216, stands 1 & 5

The ESA includes a series of small Delmarva bays, connecting riparian corridors, and other forested habitat for rare amphibian life zones. Riparian areas and wetlands were used primarily for the boundary, which also includes upland buffer for a FIDS Core area. The 5 rare species found here are all Delmarva bay species, including 3 globally rare plants. This ESA harbors 3 state-endangered plants and 1 state-threatened plant.

Moore's Chapel Roadside

Somerset County

18.25 acres within:

Tract#5432: stands 2 & 3

This ESA includes the only Maryland location of a state-endangered plant characteristic of emergent non-tidal wetlands. The ESA boundary includes all emergent and scrub-shrub non-tidal wetlands plus a 100 foot upland buffer. This area may have good wetland rehabilitation potential.

Nassawango Central Macrosite

Wicomico/Worcester County

1502.43 acres within:

Tract#3505: stand 4 & 6, Tract#3720: entire tract, Tract#3740: entire tract,
Tract#3741: stand 1, Tract#3743: entire tract, Tract#3749: 1, 2, 3, 4, & 5

This enormous ESA is an assemblage of 6 smaller ESAs, connected as part of a landscape level boundary to maintain the upper Nassawango Creek ecosystem. This area ranks as one of the highest priority areas for the conservation of biological diversity on the Eastern Shore. A total of 20 RTE species occur here including 10 state-

endangered plants, 1 state-endangered amphibian, 5 state-threatened plants and 4 state-rare plant species. The smaller ESAs comprising this are described below.

Colbourne Ponds

Worcester County

Tract#3720: stands 1 & 7

This ESA, part of the Nassawango-Colbourne Complex, contains 2 state-endangered plants: one a pine barren species, the other a wet flatwoods or bog species. The ESA boundary follows a jeep trail for its western border, encompasses a soil type indicative of flatwoods and includes a seasonally wet emergent non-tidal wetland and adjacent amphibian life zone.

Colbourne Powerline

Worcester County

Tract#3743: stands 3, 4, 5, 6 & 8

This ESA, part of the Nassawango-Colbourne Complex, comprises 6 RTE plants including 3 state-endangered and 3 state-threatened species. One of these is globally rare. Two of these species are found growing in xeric sandy conditions while 4 are emergent wetland plants. The ESA boundary includes occupied xeric sandy habitat and xeric sandy soils in the vicinity that offer potential habitat under suitable management, plus adjacent seasonally wet emergent wetlands and buffer.

Colbourne Sand Ridges

Worcester County

Tract#3720: stands 2, 4, 7 & 10

This ESA, part of the Nassawango-Colbourne Complex, includes a xeric sandy ridge along the east side of Nassawango Creek with small non-tidal emergent wetlands within interdunal swales, all supporting 7 RTE species. The sandy ridge harbors a state-threatened plant species, while the wetlands provide habitat for 2 state-threatened and 3 state-rare plants, and a state-endangered amphibian.

Forest Lane Roadside

Worcester County

Tract#3740, stand 2

This ESA, part of the Nassawango-Colbourne Complex, was established for a state-endangered wetland plant that occurs in a roadside ditch adjacent to a Chesapeake Forest tract. The ESA boundary includes the roadside ditch habitat of the rare plant, a powerline ROW swale and associated emergent wetland area south of the ROW, plus upland buffer. Potential exists for habitat restoration and expanding the rare plant population onto the adjacent Chesapeake Forest tract.

Mount Olive Church Wetlands*Worcester County*

Tract#5432, stands 2 & 3

This ESA, part of the Nassawango-Colbourne Complex, includes nontidal wetlands and hydric soils that contain habitat for 9 RTE plant species plus an upland forest buffer. The RTE plant species (7 state-endangered, 2 state-threatened) occur in a range of habitats from seasonally wet emergent non-tidal wetlands to xeric sand ridges.

Twigg Wetlands*Worcester County*

Tract#3749: stands 1, 2 3, 4 & 5

This ESA, part of the Nassawango-Colbourne Complex, is within a former swamp forest converted to loblolly pine plantation that still supports 6 RTE plants indicative of its former natural diversity. The 3 state-endangered, 1 state-threatened and 2 state-rare species are all found in scattered open-canopy areas dominated by sphagnum moss. The potential for rare amphibians is high for this site if it is restored. The ESA boundary includes a number of emergent and forested wetlands plus upland buffer and adjacent amphibian life zone.

Peters Creek Upland**Wicomico County**

178.41 acres within:

Tract#3543: stands 1, 4, 5 & 6

This ESA supports both a state-threatened and state-rare plant species. Both are species of xeric sandy soils. The ESA boundary contains rare species habitat including a diverse complex of xeric soils and sand ridges, wetland swales, and freshwater seepage areas on and below slopes leading to Peters Creek and Quantico Creek. The marsh ecotone also has potential for rare species. The area has excellent potential for rehabilitation of xeric plant communities.

Pikes Creek*Worcester County*

234.55 acres within:

Tract#3765: stands 1, 2, 3, 4, 7, 9, 10, 15 & 16

This ESA is a diverse area of xeric sandy ridges, emergent nontidal wetlands, and a floodplain forest supporting 9 RTE species. These include 2 state-endangered emergent wetland plants, 6 state-threatened plants (3 xeric sand ridge species, 3 wetland species) and one state-rare plant. Two of these species are also globally rare. The ESA boundary includes wetlands that support rare plant species and adjacent hydric soils, the headwaters of Pikes Creek, and upland buffer to protect hydrology and water quality of the rare species habitat, plus xeric sand ridges.

Pine Pole Wet Woods**Somerset County**

37.64 acres within:

Tract#4809: stand 2, Tract#4847: stands 4 & 6, Tract#4861: stands 2, 4 & 5

This ESA contains a state-endangered and a state-threatened plant species, both characteristic of emergent wetlands are on one tract edge and along an old logging road. The ESA boundary includes nontidal wetlands along the woods road that provide habitat for rare plants. Adjacent forested wetlands on Chesapeake Forest property are included for future enhancement opportunities to increase habitat for rare plants that need open canopy. A 100-foot upland buffer is included along wetlands.

Powell Road Wetlands**Wicomico County**

81.77 acres within:

Tract#3554: stands 2, 3, 4 & 6, Tract#3560: stands 1, 2, 3 & 6

This ESA harbors 2 state-endangered and 2 state-threatened plant species indicative of both non-tidal emergent wetland communities and xeric sand ridge communities. The ESA boundary includes wetland habitat under a powerline ROW that harbors rare plants, adjacent forested wetlands to protect hydrology, water quality and offer potential habitat for rare plants if the canopy were opened. A 100-foot upland buffer that includes xeric sandy soils is included for all nontidal wetlands.

Princess Anne Marshes**Somerset County**

189.38 acres within:

Tract # 4803: stands 1 & 2, Tract # 4825: stands 1 & 3,

Tract#4827: stands 1, 3, 5, 6, 7, 8, 9 & 10, Tract#4854: stands 2, 3, 5, 7 & 8, Tract#4895: stands 1 & 2, Tract#4896, stand 3 & 4, Tract#5423: stands 3, 4 & 5, Tract#5472: stand 1

This ESA includes a riparian buffer along the headwaters of the Manokin River and tributaries, upstream of a state- and federally-endangered fresh-tidal wetland plant and 2 other fresh-tidal plant species (one state-endangered, one state-rare). Management must maintain water quality and quantity. A number of tracts are also in a high-quality FIDS area where riparian buffers are expanded to 300 feet.

Princess Anne Railroad Tracks**Somerset County**

53.36 acres within:

Tract#4826: stands 1 & 2, Tract#4830: stand 1, Tract#4881, stand 1

This ESA includes a railroad and powerline ROW that supports small populations of a state-threatened plant species and a state- and globally-rare plant species. The ESA boundary protects rare species habitat within the managed ROW and adjacent wetlands that offer additional habitat for rare species, with appropriate management.

Rhodesdale Powerline*Dorchester County*

117.91 acres within:

Tract #4204: stands 1, 3 & 4, Tract #4259, stands 1, 2, 3 & 4

This ESA contains a state-threatened emergent non-tidal wetland plant species that occurs along a powerline ROW. The ESA boundary includes a 100 foot wetland buffer around a designated WSSC and adjacent wetlands.

Route 313 Powerlines*Wicomico County*

7.48 acres within:

Tract#3578: stands 1 & 6

This ESA contains a state-rare non-tidal emergent wetland plant species which occurs along a powerline ROW. The ESA boundary includes wetland habitat along the ROW, associated upstream riparian habitat to protect water quality and hydrology, and expanded buffers to protect a high quality FIDS area.

Saint Lukes Sand Ridge*Worcester County*

71.26 acres within:

Tract#3738: stands 3, 7, 8, 9 & 10

This ESA encloses a xeric sand ridge and seasonally wet interdunal swales. Both habitats support RTE species, with a state-endangered plant on the sand ridge and a state-threatened plant in the emergent wetland. The ESA boundary includes xeric sand ridge habitat, associated Lakeland soils, and some nontidal wetlands to the south for maintenance of a xeric/hydric complex. High quality FIDS habitat is also included.

Saint Lukes Wet Woods*Worcester County*

134.65 acres within:

Tract#3744: stands 1, 2, 3, 4, 5, 6 & 7

This ESA has 8 RTE plant species, including 2 state-endangered, 3 state-threatened and 3 state-rare species. The rare species occur within a powerline ROW with a seasonally wet emergent non-tidal wetland, a recent clearcut that is also seasonally wet, and sphagnum-dominated open forest trails. The ESA boundary includes occupied and potential rare plant habitat, based on soil type and hydrology, plus adjacent woodlands and buffer.

Sand Road Woods

Worcester County

6.57 acres within:

Tract # 3714: stands 6 & 9

This ESA was delineated to protect a state-endangered plant of dry, sandy woods. ESA boundaries include soils with potential habitat and a buffer.

Scarboro Wetlands

Worcester County

18.40 acres within:

Tract # 3777: stand 6

This ESA is a series of abandoned sandpits that contain 3 state-endangered and 1 state-rare plant species. One of the former is the largest Maryland population and 1 of only 3 Maryland populations. The ESA boundary includes a seasonal pond and excavated wetland that harbor rare plants, plus wetlands in the immediate vicinity to maintain hydrology and water quality of rare plant habitat. An upland buffer is included for the seasonal ponds to provide for amphibian life zones.

Shelltown Ponds

Somerset County

14.43 acres within:

Tract # 4813: stands 2, 3 & 4

This ESA focuses on protection of 2 fresh tidal marshes and adjacent ponds. The marsh harbors 1 of 3 Maryland populations of a state-endangered marsh grass, and the area around the ponds contains 2 state-rare plants. The ESA boundary includes the marsh, ponds and adjacent buffer, which is the primary function of the Chesapeake Forest tract.

Snethen Church Road Powerline

Wicomico County

33.34 acres within:

Tract # 3569: stands 2 & 3, Tract # 7161: stands 1, 2, 3 & 4

This ESA contains 2 state-endangered wetland plants, one of which is globally rare, and a state-rare plant of xeric sandy ridges. The ESA boundary includes a complex of wetlands and xeric uplands, plus buffer and amphibian life zones. Pocomoke soils support Delmarva Bay type communities with rare plants and excellent potential for amphibians. Evesboro Galestown soils support xeric sandy ridge species.

Spearin Road Powerlines

Wicomico & Worcester Counties

297.70 acres within:

Tract # 3580: stands 1 & 2, Tract #3 597: stands 1, 2, 3, 4 & 5,

Tract#3786, stands 1, 2, 3 & 4, Tract#7153: stand 1 & 2

This ESA contains a large powerline ROW with saturated wetland soils and xeric sand ridges with 12 RTE plant species. These include 7 state-endangered, 2 state-threatened and 3 state-rare plants. The ESA boundary includes rare plant populations within the powerline ROW and adjacent xeric sandy soils and non-tidal wetlands that offer potential habitat for these species if suitably managed.

Stevens Road Powerline

Worcester County

60.84 acres within:

Tract # 3710: stands 1, 2 & 4

This ESA contains a small powerline ROW with two state-endangered species, one state-threatened species and one state-rare species. These species require a seasonally inundated habitat with sandy soils. The ESA contains the habitat they currently occupy, and additional habitat for these species if suitably managed.

Stump Gut Complex

Wicomico County

503.92 acres within:

Tract #3535: entire tract, Tract # 3550, stands 1 & 2, Tract #3561: entire tract,

Tract #3571: entire tract, Tract #3563: entire tract, Tract #3595: entire tract,

Tract #7124: entire tract, Tract #7179: stands 1 & 2

This ESA stands out as one of the premier natural areas on former Chesapeake Forest Products lands. The ESA boundary includes exceptional tidal and nontidal wetland communities bordering the Nanticoke River and associated small tributaries. These wetlands, pristine brackish and freshwater marsh plus floodplain swamp, provide habitat for several rare and uncommon plant species including 1 state-threatened and 2 state-rare plant species. A state-endangered shrub occurs in the marsh-swamp ecotone, one of only historical 4 Maryland populations. The swamp is a mixture of deciduous trees such as red maple, green ash, pumpkin ash and black gum, with Atlantic White Cedar near the upland edge where freshwater seepages occur. The adjacent sandy uplands contribute groundwater to the nontidal wetlands and have good potential for rehabilitation to the native xeric sand ridge/flatwoods ecosystem that historically dominated this landscape. The large blocks of forest along the Nanticoke River are a FIDS core area.

Taylor's Trail Sand Ridges

Wicomico County

119.81 acres within:

Tract #3547: entire tract, Tract#3552: stands 1, 2 & 5

This ESA includes a large xeric sand ridge that parallels the eastern side of the Nanticoke River, the Nanticoke River's high quality tidal marshes, floodplain forest, and sand flats that extend to the east from the xeric sand ridges. Two state-endangered, 2 state-threatened and 1 state-rare plant occur within this ESA, as well as a nesting pair of the state- and federally-threatened Bald Eagle. A number of RTE plants are associated with riparian-xeric interface where freshwater seepage, while others are found exclusively on the xeric sand ridge which has unique "sugar" sands. The ESA boundary includes a large sand ridge and sand flat/wetland complex with tremendous potential for enhancement. There is good potential for additional rare species along the upland-tidal and tidal-nontidal interfaces.

Upper Nanticoke River

Dorchester County

36.68 acres within:

Track # 4206: stand 1 & 3, Track #4212: stand 3

This ESA includes the upper portions of the Nanticoke River, and an associated upland buffer. This ESA includes the many rich and diverse natural communities associated with the river and its associated uplands. Among the many species associated with this ESA are two globally rare species.

Upper Wetipquin Creek

Wicomico County

16.51 acres within:

Tract #7107: stand 2, Tract #7132: stands 1 & 2

This ESA includes the headwaters of Wetipquin Creek and an expanded upland buffer for a high quality FIDS areas. A state-rare tidal freshwater mudflat plant occurs just downstream from the Chesapeake Forest tracts, which act as buffer.

Wagram Creek

Worcester County

42.29 acres within:

Tract #1045: stands 2, 3 & 4

This ESA encompasses Wagram Creek and surrounding upland buffer from Wagram Road upstream to the Maryland-Virginia Railroad. This is a very diverse tidal wetland community. The creek is surrounded by an extensive fresh-tidal wild rice and cattail marsh, which is bordered by a shrub swamp, then forested swamp and uplands. The marsh and shrub swamp include a population of a state-endangered plant, while the swamp includes bald cypress.

Wango Pines

Wicomico County

202.26 acres within:

Tract #3570: stands 1, 2 & 5, Tract #7159: stand 1, Tract #7167: stands 1, 2 & 3

This ESA, which supports 7 RTE species, includes a complex of Delmarva bay-like emergent wetlands interspersed with xeric sand ridges. Rare species include a state-endangered butterfly, 2 state-endangered, 2 state-threatened and 2 state-rare plants. The ESA boundary includes a complex of non-tidal wetlands, surrounding xeric sand ridges, wetland buffer and amphibian life zones.

Wetipquin Pond

Wicomico County

115.83 acres within:

Tract #7155: stands 2 & 4, Tract #7156: stands 3 & 5, Tract #7178: stands 3 & 4

This ESA includes a Delmarva bay community, surrounding forested wetland and upland buffer. The adjacent property to the Chesapeake Forest tracts contains the only Maryland location for a globally rare and state-endangered wetland shrub. A state-threatened wetland plant also occurs here. There is high potential for rare amphibians in this wetland complex. The ESA boundary surrounds discrete wetlands in the vicinity of the Delmarva Bay, including most of the basin in which the bay occurs. Where the wetland extends thousands of feet west of the bay, the protection boundary was drawn through the narrowest point of the wetland, coinciding with a sand road that bisects the wetland. Impacts of activities that might affect water levels in the bay, such as logging and ditching were considered. On the northeast side, the tributary leading to Peters Creek should be provided an expanded stream buffer of 300 feet as this entire area is a core FIDS area.

5. Other Special Areas & their Management

A number of other areas have been identified on Chesapeake Forest lands that have special significance. These include historic sites, research areas and other areas that will require special management. Once one of these areas has been identified in the field, the goal is to develop a management plan for each site, which reflects any protection needs. Protection can range from fencing off the site, marking it, and putting up appropriate signs so that people do not inadvertently damage the site (often done with graveyards, for example) to discrete prescriptions within the annual forest management plans. Any proposed management of these special areas will be reviewed and implemented as part of the Annual Work Plans (AWP). This will often be done at the time another silvicultural operation (thinning or harvest) is planned. At that time, it is critical that any special area that might be affected be identified, and that a plan to protect it becomes part of the AWP for whatever other activities are involved. In the sample Annual Work Plans provided in Part 9, we have used “flags” to show those stands where it is believe that a special area might exist. Managers are expected to make diligent field inspections for these areas as part of planning whatever work is contemplated.

Performance measures to judge the adequacy of those plans, and the subsequent management actions, should include:

1. Each identified special area is appropriately marked on the ground and documented in the data set.
2. Each plan is sufficient to protect the special values identified for each area.
3. Field examination and monitoring reveals that the plan is being implemented properly and that the special values are, in fact, protected or enhanced as the plan indicated.